CLAIM AMENDMENTS

1. (Original) An optical signal equalizer for equalizing one or more received signals modulated at a preselected modulation bit rate in an optical system, the equalizer comprising

a first coupler with a variable coupling ratio for splitting the light into two or more portions;

a controllable interferometer unit having two or more arms, each arm receiving one portion, at least one arm having an additional delay which is equal to an integer multiple of $1/\Delta f$, where Δf is the channel spacing between adjacent wavelengths utilized in the optical system;

at least one arm having a controllable delay unit for adjusting the relative phase of the light passing through that arm; and

and a second coupler for combining the portions from the arms.

2. (Amended) ~~Claim 1~~ The optical signal equalizer of claim 1 wherein the optical system is a multiwavelength system, and wherein □f is the channel spacing between adjacent wavelengths of the multiwavelength system.

3. (Original) An optical signal equalizer unit including two optical signal equalizers of claim 1 connected in series.

4. (Original) The optical signal equalizer of claim 1 wherein the number of arms within the interferometer unit is two and the variable coupling ratio coupler includes

a first coupler for splitting the optical signal into two portions;

two arms for connecting the first coupler to a second coupler ;wherein the first or second arm has a controllable phase unit for adjusting the variable coupler ratio; and

the second coupler for combining the two portions

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5. (Original) The optical signal equalizer of claim 1 arranged to compensate for leading or lagging intersymbol interference in the logic "0" bits of the received signal.

6. (Original) The optical signal equalizer of claim 1 being used to improve the bit error rate (BER) of received signals that are impaired by intersymbol interference or distortions that lead to intersymbol interference.

7. (Canceled)

8. (Original) The optical signal equalizer of claim 7 being used to improve the bit error rate (BER) of received signals that are impaired by intersymbol interference or distortions that lead to intersymbol interference.

9. (Original) The optical signal equalizer of claim 7 wherein one or more of the couplers are variable.

10. (Original) A method of operating an optical equalizer of an optical system for equalizing a received optical signal modulated at a preselected modulation bit rate, comprising the steps of:

5 splitting the light into two or more variable portions;

creating a differential delay between the two or more of the portions, which is approximately is equal to an integer multiple of $1/\Delta f$, where Δf is the channel spacing between adjacent wavelengths utilized in the optical system;

adjusting the phase of the light in one of the two or more portions;

combining the two or more portions into a single output; and

whereby the variable adjustments are made so as to mitigate intersymbol interference impairments in the received optical signal.

11. (Original) The optical signal equalizer of claim 2 being part of a optical system comprising a multiwavelength transmitter connected to an optical path, said optical equalizer being connected in one of a plurality of locations in the system including just after a transmitter within the multiwavelength transmitter, just after the multiwavelength transmitter, or within the optical path.

12. (Original) The optical signal equalizer of claim 2 being part of an optical system an optical path connected to an multiwavelength receiver, said optical equalizer being connected in one of a plurality of locations in the system including within the optical path, just before the multiwavelength receiver, or just before a receiver within the multiwavelength receiver.

13. (Original) The optical signal equalizer of claim 1 being part of an optical system comprising one or more transmitters connected over an optical path to one or more receivers, said optical equalizer being connected in one of a plurality of locations in the system including the output of a transmitter, within the optical path, or the input of a receiver.

14. (Original) The optical signal equalizer of claim 1 being part of an optical system comprising one or more transmitters connected to an optical path, said optical equalizer being connected in one of a plurality of locations in the system including the output a transmitter or within the optical path.

15. (Original) The optical signal equalizer of claim 1 being part of an optical system comprising an optical path connected to one or more receivers, said optical equalizer being connected in one of a plurality of locations in the system including within the optical path or the input to a receiver.

16. (Original) A method for use in an optical apparatus including a semiconductor optical amplifier and an optical signal equalizer for controlling the degradations in an output signal from the optical apparatus, comprising the steps of:

receiving an optical signal modulated at a preselected modulation bit rate:

splitting the received signal light into two or more variable portions;

creating a differential delay between the two or more of the portions, which is approximately is equal to an integer multiple of $1/\Delta f$, where Δf is the channel spacing between adjacent wavelengths utilized in the optical apparatus;

adjusting the phase of the light in one of the two or more portions;

combining the signals into a single output signal: and

whereby the variable adjustments are made so as to control degradation of the output signal.

17. (Original) The optical signal equalizer of claim 1 being connected to a semiconductor optical amplifier for use in an optical system, the optical signal equalizer and optical amplifier being located in at least one of a plurality of locations in the system including within a optical transmitter, optical node, or optical receiver of the optical system.

18. (Original) The optical signal equalizer of claim 17 wherein the optical system includes at least one semiconductor optical amplifier which is connected either prior to, after, or both prior to and after the optical signal equalizer.